Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

of all, we were glad because we, too, value schools for nursing very highly and because through this common idea for education we shall come closer together.

To the nurses of France the nurses of America make this gift in memory of our sister nurses who died for a great cause—and in love and admiration for the people of France.

HOOKWORM DISEASE—A HEALTH PROBLEM OF THE SOUTH

By Martha M. Giltner, R.N.
Greenville, Mississippi

HOOKWORM disease occurs in all countries of the world in the territory comprising 66 degrees of latitude encircling the middle portion of the earth, where are to be found those conditions of climate and soil which favor the development of the parasite. It decreases as the more temperate climate is reached. The first history of the disease in the United States is published in reports of dirt eating and anemia among the negroes of several of the southern states. Dr. Stiles quotes Joseph Pitts as the earliest author he has found to refer to the disease in this country. In 1808 he describes the dirt eating among the poor whites and negroes as due to deficiency of nourishment. After 1886 physicians in the south frequently reported that hookworm was prevalent in the southern states. It had previously been known or spoken of as mountain anemia, negro consumption, malarial anemia, malnutrition, and dirt eating. Up to 1910 no systematic investigation had been made in the United States, though Dr. C. W. Stiles had made many valuable observations in various parts of the country and it was known that the territory from the Potomac River, including all the southern states, was infected.

There are two common species of hook worm that affect man: the old-world type, *uncinaria duodenalis,* and the American, *uncinaria Americanus.* The latter, being found in this country, has been renamed by Stiles as *necatur Americanus,* or American murderer.

The hook worm is described as being a small worm, the male six to ten millimeters, the female eight to fifteen millimeters in length. Its color is usually a grayish white, though often a dark reddish purple, probably due to contained blood. The head is small, body cylindrical. The mouth shows four lips, two in front and two behind. Just below the lips are six little projections, and below these on the floor of the mouth are four hooklets and one sharp conical tooth. It is by means of this peculiarly formed mouth that the worm attaches itself to the intestinal wall and sucks the blood.

High temperature—78.5° F. to 95° F.—moisture, shade, and oxygen are necessary for its development. Few ever develop under 71° F. Freezing often kills the larvae and direct sunlight kills them. Elevation is of no importance if other conditions are favorable. Stiles has shown that sandy soil is most favorable for its development. Rapidity of development depends upon the temperature, shade, oxygen and moisture. The female lays eggs in the intestines of the host; which do not hatch in the intestines, but are expelled with the feces. If conditions are favorable the egg hatches in eighteen hours, the larva lives on the feces, it sheds its skin in from two to five days, and sheds it again in from five to nine days, this time it lives encysted in the old skin and ceases to feed and grow. In this stage it leaves the feces and seeks the moist earth. It cannot infect until it reaches this stage.

It may enter the body through two routes: directly, through the mouth, on fruit, vegetables, or in drinking water; or indirectly through the skin. It is estimated that 90 per cent of victims are infected through the latter route. It usually enters the skin between the toes, producing an irritation known as ground itch, dew poison, water sore, or toe itch. It now makes its way into the blood vessels, then to the heart, through to the lungs, where it bores through into the air cells, then into the windpipe, is coughed up into the throat, is swallowed, and passes into the stomach, then to the small intestines.

In the intestines it sheds its skin the third time, attaches itself to the mucous membrane of the intestinal wall and sucks. Further development takes place, it sheds its skin the fourth and last time and begins to grow rapidly. In six to eight weeks it begins to lay eggs and the whole cycle is begun over again. Bass, in estimating the number of eggs in a heavily infected case which he examined in Louisiana, states that at least 4,490,000 eggs were passed in the stool.

Investigators have fixed the average length of life of this parasite at from five to ten years, though in some cases it would seem to show that it is longer.

The worm does not remain fastened to one place indefinitely, but releases its hold and attaches itself again; each time it leaves a raw open wound which may continue to bleed or may become infected by other germs. It is estimated that a worm will suck a drop of blood daily.

Hook worm disease is no respecter of persons. It affects those of all ages, sex, and social condition, but it is more often found among those that have intimate contact with the soil,—the farmer, gardener, brick layer, children who go barefoot. The youngest case reported in Virginia was a baby thirteen months old; the oldest, a man of ninety-three years.

The effects produced by this disease vary with the intensity of the infection and the condition of the patient.

At least 90 per cent of all the cases begin with ground itch. Anemia is the most prominent and constant symptom. Other symptoms are: dry hemp-like hair,—usually scant, sometimes being entirely absent on the body,—the skin dry, pale and sallow, pulse weak and rapid, palpitation frequent, eyelids puffed and face swollen, oedema of the abdomen and extremities, dyspnoea marked upon slightest exertion, temperature varied—sometimes elevated (due frequently to infection of the wounds produced in the intestines by the worms) sometimes subnormal; the face stupid in appearance, features expressionless, pinched and drawn, pupils dilated and in some cases, night blindness. The muscles of the chest are emaciated, the ribs and shoulder blades are prominent, the shoulders droop. The appetite is usually poor but in some cases it is ravenous. It is very often perverted, the patient craving such things as dirt, chalk, and coffee grounds. It is noticeable that many infected girls and women are very heavy users of snuff. Digestive disorders are common. Often there is a hacking cough due to the irritation of the larynx by the young worms; constipation is the rule although some cases have diarrhoea. Many have joint pains. Young girls suffer more from nervousness as a rule than do boys, particularly during the adolescent period. Puberty is often delayed. It is not unusual to find girls of twenty-one who have not menstruated. Mental and physical development is in many cases greatly retarded. There is a lack of ability in the child to concentrate upon his studies and the victims of the disease easily become tired and exhausted. Headache is very common among school children and there is a great lack of interest in school. The child does not care to romp and play. The red blood count is as low as 1,250,000; hemoglobin reduced as low as 20 per cent. This, with the constant loss of blood and production of toxin which produces the injurious results on the entire body, accounts for the lack of physical and mental development. It is not uncommon to see a child of fifteen no larger than a normal child of ten, or one of twelve or fifteen years of age in the second or third grade in school.

"Hookworm does not cause laziness. It does produce anemia with a resulting weakness and lack of energy." Lists of children found infected usually correspond with those of the dullest pupils in their grades. In one women's college, for example, the average standing of fifty-six students found infected was 78 per cent, whereas

56 students found free of infection had a standing of 89 per cent. In another instance 25 infected boys in a southern academy averaged 64 per cent in their studies, as compared with 86 per cent in the same number of non-infected. Retardation here was 25 per cent. Teachers everywhere are unanimous in reporting that treatment of the infected pupil results not only in marked gain in weight and physical appearance, but in decided improvement in zeal and intelligence as well.

Hookworm disease rarely kills people directly, and while the direct effects are serious, the indirect effects are more so because of the lowered vitality and weakened resistance. This condition makes the sufferer more susceptible to other diseases and lessens his chances for recovery. Mild cases may go on for years and the trouble not be recognized. It is now strongly suspected that many cases of supposed tuberculosis among negroes are undiagnosed hookworm disease.

(*To be continued*)

SYNERGISTIC ANAESTHESIA

As Used in the North Chicago Hospital

By Eleanor C. Ahrens, R.N.
Chicago, Illinois

(The following article is published on request of a nurse who was embarrassed to find herself unfamiliar with newer methods of anaesthesia.—Ed.)

NURSES are familiar with the symptoms of post-operative discomfort which result from acidosis and traumatic shock. Following all ether anaesthesia, acetone bodies are found in the urine. It is said by some surgeons that six per cent of the laparotomies show acetone for the first twenty-four hours after operation.

Dr. J. T. Gwathmey of New York City contributed to the subject of Synergistic Anaesthesia in 1920-1921 a number of articles which were published in the *Journal of the American Medical Association.*

Dr. Joseph C. Beck of the North Chicago Hospital, a noted Otorhino Laryngologist, has been using the following method for a number of months with great success.

The drugs used are: Morphine for adults, paragoric for children, in lieu of morphine; Magnesium Sulphate 25 per cent solution; Ether; Olive Oil; Paraldehyd.

The technique is as follows:

Two hours before the patient is to be operated upon,—after pre-